

Attorney Docket No.: 53951-122

**Claims**

Please amend the claims as indicated in the following complete list of claims showing the amendments thereto.

1 – 16 (canceled)

17. (new) A renal replacement therapy system, comprising:

a blood treatment device;

an extracorporeal fluid circuit including a first panel comprising first and second sheets of flexible material forming a portion of a fluid pathway defined by a pattern of seals;

an in-line sensor region between the two flexible sheets, said sensor region being characterized by an expanded portion of said fluid pathway which has substantially flattened walls defined by said flexible sheets;

said at least one fluid pathway carrying conveying fresh fluid for consumption by a blood treatment component and waste fluid from said blood treatment component;

the at least one fluid pathway, including said expanded portion, being free of an air interface;

the blood treatment device including a sensor physically contacting a non-wetted surface of said expanded portion to measure fluid pressure within said first when said fluid;

said extracorporeal fluid circuit including a blood circuit portion adapted to circulate blood from an individual through the blood treatment component to treat it and to return treated blood to the individual.

18. (new) A system according to claim 17 wherein the first panel includes an in-line pump region to convey fluid in the flow channel in response to peristaltic pressure externally applied to the flexible panel.

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19. (new) A system according to claim 17 wherein the in-line sensor region is located in an upstream flow direction from the in-line pump region.

20. (new) A system as in claim 17, wherein said blood treatment device includes recesses that define a chamber, said first panel includes a chamber portion in fluid communication with said in-line sensor region that is expanded by said blood treatment device to fill said recesses, whereby said chamber portion defines a fixed volume chamber.

21. (new) A system as in claim 17, wherein said sensor includes a strain gage type pressure sensor.

22. (new) A system as in claim 17, wherein said sensor region has a non-circular cross-section.

23. (new) A method for renal replacement therapy of a patient's blood, comprising the steps of: providing an extracorporeal fluid circuit comprising a blood treatment device, a first panel comprising first and second sheets of material sealed to form a first fluid pathway and a first chamber, the first fluid pathway and first chamber free of an air interface, and a second panel comprising first and second sheets of material sealed to form a second fluid pathway and a second chamber, the second fluid pathway and second chamber being free of an air interface, wherein the first and second panels are arranged in overlapping fashion and aligned so that the first chamber overlays the second chamber;

attaching the patient to the extracorporeal fluid circuit to access the patient's blood;

circulating blood from the patient through the blood treatment device and to return treated blood from the blood treatment device to the patient;

supplying fresh treatment fluid at a rate that waste fluid is withdrawn from said treatment device using the first and second panels to balance the volume of removed waste fluid with the volume of fresh treatment fluid;

and measuring fluid pressure in the first or second fluid pathway using a sensor operatively associated with at least one of the first or second panels.

24. (new) A method according to claim 23 wherein the sensing step senses fluid pressure downstream of a location where pumping pressure is applied.

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25. (new) A method according to claim 23 wherein the sensing step senses fluid pressure upstream of a location where pumping pressure is applied.

26. (new) A renal replacement therapy system, comprising:  
a blood treatment device having a pressure sensor region;  
a fluid circuit;  
said fluid circuit including at least one panel defined by flexible panel walls in which fluid flows between said flexible walls;

said fluid circuit being configured to be engaged by said blood treatment device including engaging a portion of said flexible panel walls by said pressure sensor region such that a pressure within said at least one panel is measurable by a force of said fluid against said pressure sensor region when said fluid circuit is engaged by said blood treatment device;

said pressure sensor region remaining outside, in contact with a non-wetted surface of said at least one panel, said at least one panel such that no fluid-air interface is required;

said fluid circuit including a treatment filter portion a sterile portion including a venous line adapted for conveying blood to a patient from said treatment filter portion and from an arterial portion adapted for conveying blood from a patient to a treatment filter portion;

· said fluid circuit and said pressure sensor region being configured such that at least one of a pressure of a venous pressure, an arterial pressure, and a pressure of blood at said treatment filter portion is indicated by said pressure sensor region.